

# Site Conceptual Models

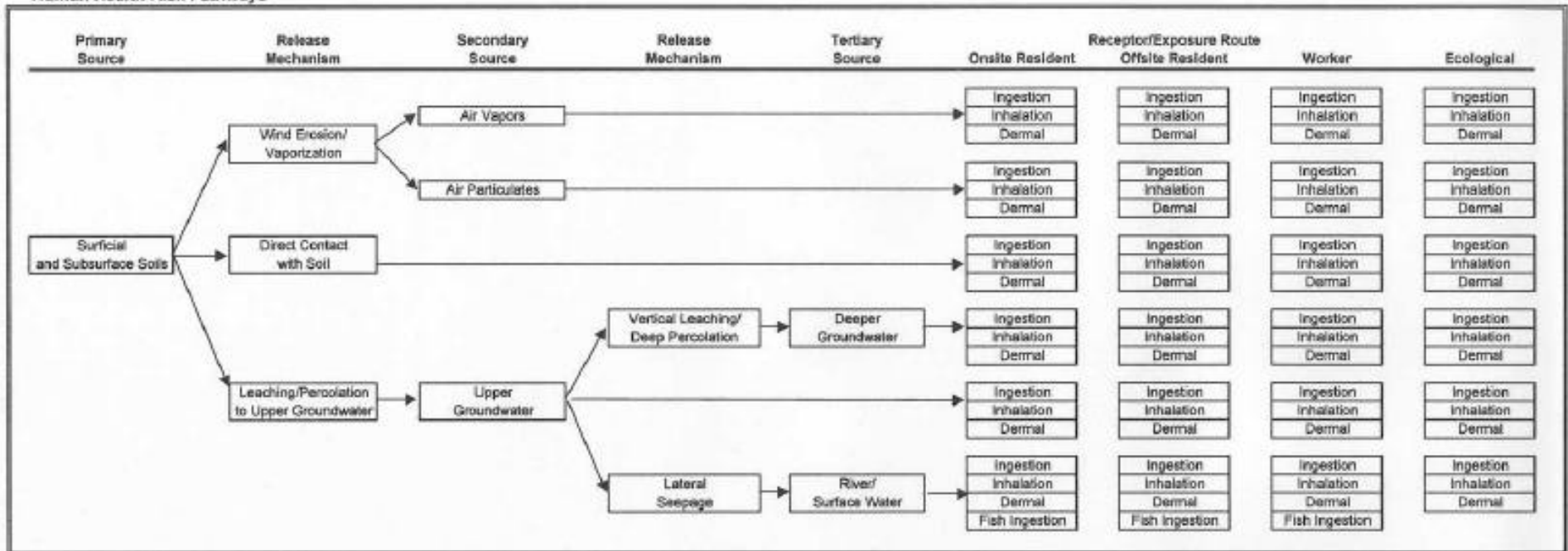
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SAM Project Manager

# Why a discussion on SCMs?

- Confusion on exactly what a SCM is
- Clarify the goals of a SCM
- Provide guidance on when a SCM is necessary
- Have consistency on the contents of SCMs
- Provide opportunity to address consultant questions and provide clarifications.

# How many think this a SCM?

Human Health Risk Pathways





# SCM questions received by DEH

- Why do we need to submit boring logs and cross sections?
- Why do we need to re-submit information that was already submitted to DEH?
- Why must a receptor pathway evaluation be included in a site assessment report?

# SCM Definition

Keith Kezer Definition:

*A comprehensive compilation of data, interpretations, and site specific circumstances which describe and explain the environmental conditions of a site based on all available information.*

# Goals of an SCM

- Provide a clear understanding of the existing environmental site conditions based on accessible/available information
- Minimize or eliminate erroneous activities
- Based on the SCM provide a clear recommendation to move to closure
- Utilize existing regulatory framework as a guide to closure (MCLs/Low Risk Sites)



# When is a SCM necessary?

- Whenever assessment activities are conducted for a site.
- If site circumstances or conditions have changed or data is outdated
- As part of a health risk assessment or a receptor pathway evaluation
- As part of any corrective action plan or closure document.

# General SCM Characteristics

- Every site will include different information depending on its specific circumstances
- Contains in depth analysis and successful presentation of data
- Comprehensive in nature including all historical data and *pertinent* events
- Includes a clear objective and direction for the site substantiated by the SCM contents



# SCM Summary

- General Site Characteristics  
History, Business type, Surrounding land use, RPs, Location, Geology, Hydrogeology, Receptors, Contaminant(s) etc.
- Procedure and Contaminant Information  
Release description, Sampling information, Soil, vapor and groundwater data interpretation (Figures)
- *Discussion*  
*Risk discussion (including receptor pathway evaluation),  
Substantiate interpretations, provide backup*
- Conclusions and Recommendations  
Trends, Risk and Delineation conclusions, data gaps, and recommendations on what to do next.

# SCM Contents

## Site Identification

- a. Site address (street name and number, city, state, zip code)
- b. Name of business at site
- c. Assessor's Parcel Number (APN)
- d. DEH Case Number (e.g., H21042-001)
- e. Property owner (name and mailing address)
- f. Tank owner (name and mailing address)
- g. Tank operator (name and mailing address)
- h. Contact person (name, mailing address and phone number)
- i. Responsible party (name and mailing address)
- j. Location maps

# SCM Contents

## Site History/Development/Usage

- a. Historical site use (including potential sources of contamination and dates)
- b. Current site use (including potential sources of contamination and dates)
- c. Future site use and development plans (type of use, new construction, below-grade structures, proposed excavation work, elevator shafts, vaults, utility trenches)
- d. Adjacent site uses (Site Vicinity Map)



# SCM Contents

## Description of Release and Site Plot Plan

- a. Substance(s) released
- b. Contaminant characterization
- c. Quantity of substance(s) released (estimate)
- d. How and when release occurred
- e. Location of release on site (can be based on data)
- f. Drawn to scale (indicate scale used)
- g. North direction arrow
- h. Streets, structures, and *utilities*
- i. Excavation and stockpile locations
- j. Tank and piping locations (past, existing, proposed)
- k. Well, boring, and sample locations
- l. Legend for symbols and abbreviations

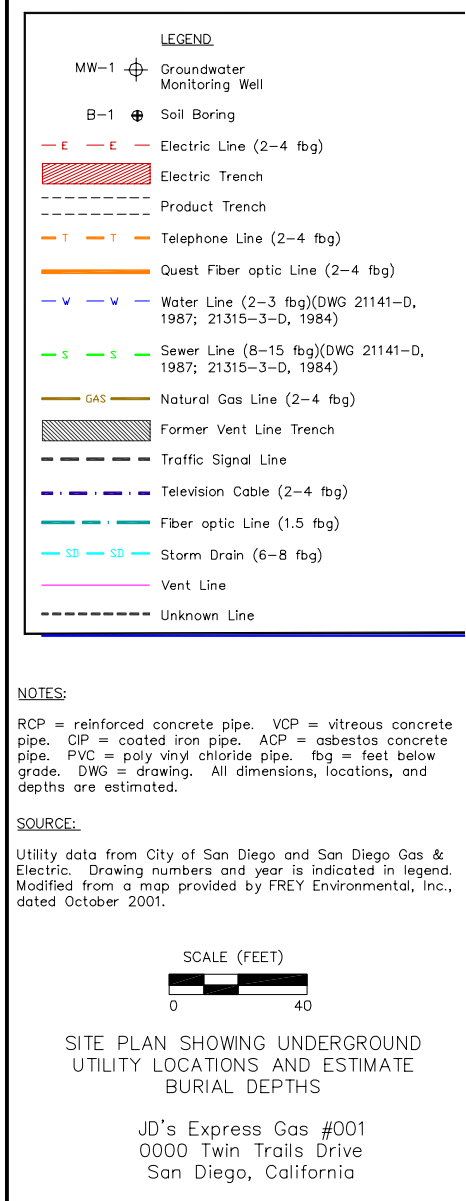


FIGURE 9

# SCM Contents

## Geology, Hydrology and Hydrogeology

- a. Local geology description
- b. Site geology description (based on borings)
- c. Topography
- d. Surface drainage and surface-water bodies in vicinity
- e. RWQCB basin plan hydrographic unit, subunit identification, and aquifer sensitivity status.
- f. Groundwater elevation measurements and depth to groundwater
- g. Groundwater gradient and direction of groundwater flow
- h. Description of all groundwater aquifers
- i. Known or probable contaminant migration patterns (consider hydrogeology, groundwater gradient, utility trenches, etc.)
- j. Source of information



# SCM Contents

## Delineation of Contamination (Soil)

- a. Summary table(s) of analytical data with sample identification, date, depth, location, analysis method(s), results, etc.
- b. Map(s) showing horizontal extent of soil contamination, probable contamination sources, contaminant migration pathways, well and boring locations, sample locations, and sample results
- c. Cross sections showing vertical and horizontal extent of soil contamination, contamination source(s), lithology, water table, sample locations, sample results, and underground structures
- f. Estimated mass/volume of contaminated soil (when applicable)

# Soil Concentration and Contour Map Example

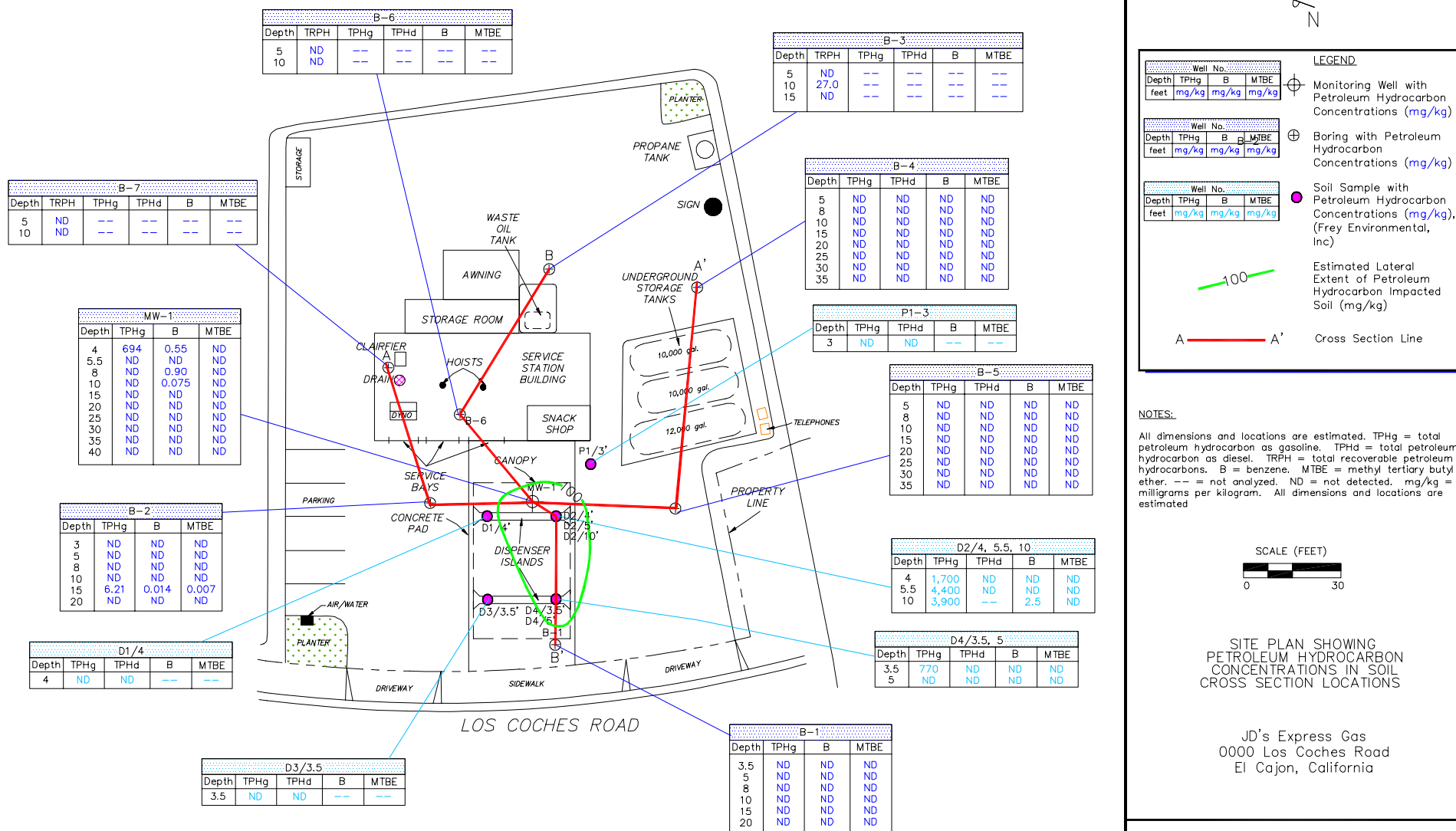


FIGURE 3

# Cross Section Example Figure

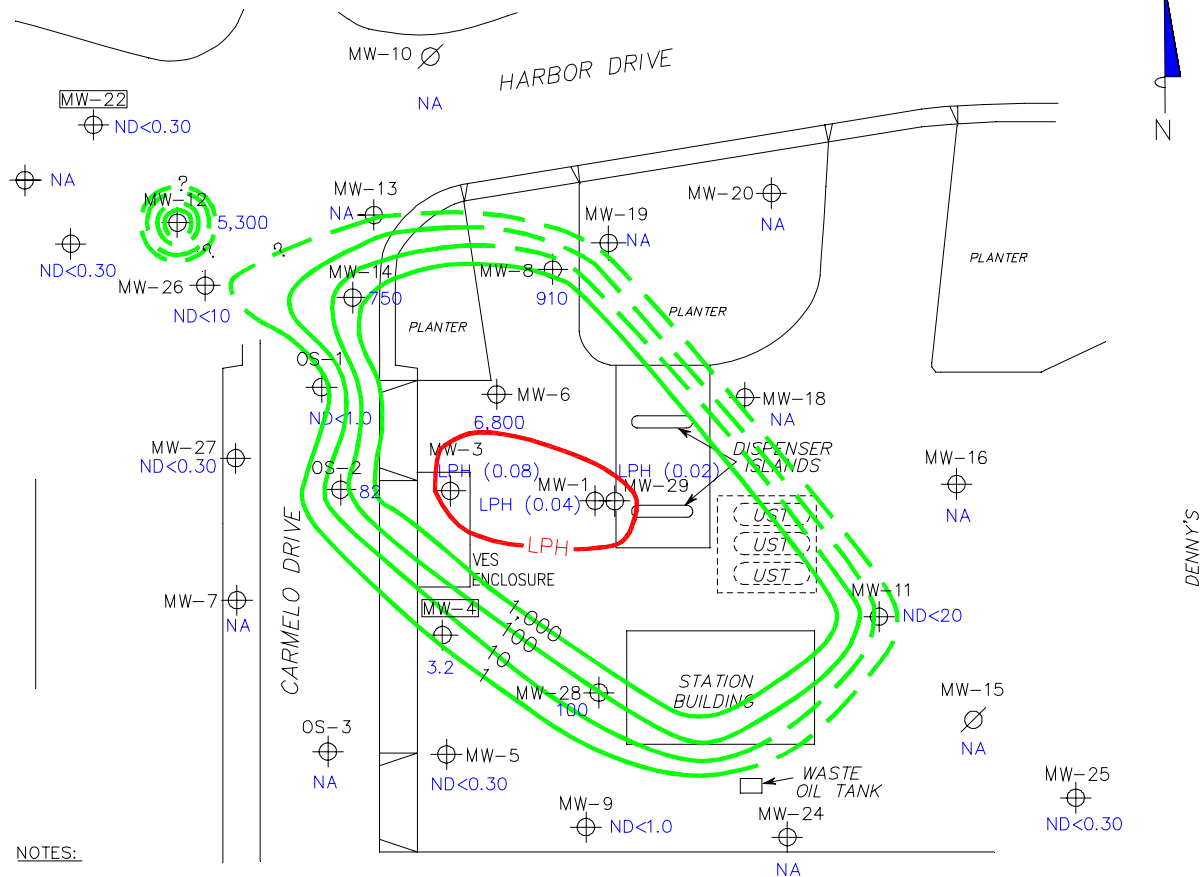


# SCM Contents

## Delineation of Contamination (Groundwater)

- a. Summary table(s) of analytical data with sample identification, depth, location, analysis method(s) and results
- b. Map(s) showing horizontal extent of groundwater contamination, well locations, sample results, product thickness in wells, groundwater elevation in wells, groundwater elevation contours, and groundwater flow directions
- c. Environmental parameters or manmade features which may affect the spread of contamination

# Groundwater Contaminant Contour Map Example



## NOTES:

Contour lines are interpretive based on laboratory analysis results of groundwater samples. UST = underground storage tank. ug/l = micrograms per liter. ND = not detected at limit indicated on official laboratory report. LPH = liquid-phase hydrocarbons. NA = not analyzed, measured, or collected. All dimensions and locations are estimated.

## LEGEND

- MW-29 Monitoring Well with Dissolved-Phase Benzene Concentration (ug/l) or LPH Thickness (feet)
- MW-15 Destroyed Well
- 100 Dissolved-Phase Benzene Contour (ug/l)

DISSOLVED-PHASE BENZENE  
CONCENTRATION MAP  
February 1, 2000

JD's Express Gas  
000 Harbor Drive South  
Oceanside, California

FIGURE 3

# SCM Contents

## Exposure Concerns

- a. Contaminant migration pathways description and receptor pathway evaluation
- b. Man-made pathways (conduits, utilities, vaults, piping, storm drains, etc.)
- c. Natural pathways (air, soil, surface water, bedrock fractures, groundwater, etc.)
- d. Impact on biological receptors (people, plants, animals)
- e. Potential nuisance complaints (odors, eyesore)
- f. Risk assessment concepts and calculations
- g. Identify all production and potable water supply wells within 1000 feet of the site by means of area site visit, California Department of Water Resources (DWR) records, etc.



# SCM Contents

## Sampling

- a. Protocol description
- b. Methods
- c. Preservation and transport
- d. Analyses performed
- e. Chain-of-custody forms
- f. Sample matrix description (clay, sand, water)
- g. Laboratory analytical reports (on letterhead)
- h. Quality assurance/quality control data
- i. Interpretation of analytical results with respect to previous and current understanding of the site

# SCM Contents

## Stockpiled Soil Management and Site Safety

- a. Volume
- b. Location
- c. Methods used to prevent aeration, run-off and public access
- d. Disposal methods
- e. Copies of manifests
- f. Site safety/security description
- g. Community health and safety issues addressed
- h. Monitoring equipment
- i. Protective equipment
- j. Public agency notifications
- k. Utility notifications (Call USA 48 hours before work by law)

# SCM Contents

## Conclusions, Recommendations, Signature

- a. Horizontal and vertical extent of soil and groundwater contamination explanation
- b. Additional assessment or other recommendations
- c. Alternative mitigation recommendations
- d. Signature(s) of report preparer(s)
- e. Signature(s) and registration number(s) of the registered professional(s) who supervised and is responsible for designated portions of the report
- f. Authorized signature for the company preparing the report  
*(original signatures required--no draft, unsigned, or electronically signed reports)*



# SCM Contents

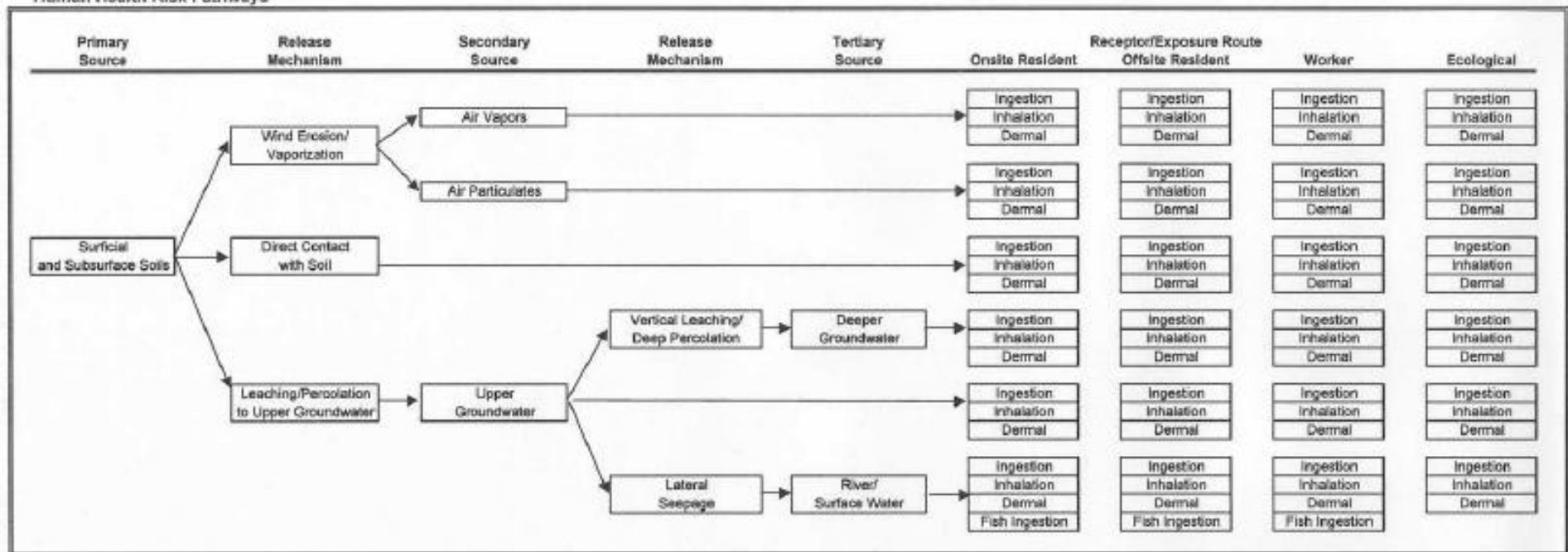
## Appendices

- a. Well/boring logs
- b. Hazardous waste manifests and disposal receipts
- c. Permits (APCD, Fire Department, Wells, etc.)
- d. Laboratory data sheets
- e. Chain-of-custody forms
- f. Backup information including calculations, notes, photographs, etc. as applicable



# Anyone still think this a SCM?

Human Health Risk Pathways



# Closing Comments

- Most of the information above will not need to be recreated each time a SCM is submitted and therefore shouldn't require excessive effort to incorporate into future documents.
- If this information is included in every SCM there's less chance of information being lost etc.
- The number one reason DEH receives for an incomplete SCM is that the information is not available (which usually means not easily available)

# Questions?

